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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,988	10/31/2003	Bon-Kee Kim	GK-US035154	8970
22919	7590	03/30/2006		
SHINJYU GLOBAL IP COUNSELORS, LLP 1233 20TH STREET, NW, SUITE 700 WASHINGTON, DC 20036-2680			EXAMINER TRINH, SONNY	
			ART UNIT	PAPER NUMBER
			2618	

DATE MAILED: 03/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/697,988

Applicant(s)

KIM ET AL.

Examiner

Sonny TRINH

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-13, 15 and 16 is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Drawings***

1. **Figure 1** should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

2. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or

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REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a).  
"Microfiche Appendices" were accepted by the Office until March 1, 2001.)

(f) BACKGROUND OF THE INVENTION.

(1) Field of the Invention.

(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.

(g) BRIEF SUMMARY OF THE INVENTION.

(h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).

(i) DETAILED DESCRIPTION OF THE INVENTION.

(j) CLAIM OR CLAIMS (commencing on a separate sheet).

(k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

(l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A  
"Sequence Listing" is required on paper if the application discloses a  
nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if  
the required "Sequence Listing" is not submitted as an electronic  
document on compact disc).

3. **Claim 14** is objected to under 37 CFR 1.75 as being a substantial duplicate of **claim 13**. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

***Allowable Subject Matter***

4. **Claims 1-13, 15-16** are allowed.

The following is an examiner's statement of reasons for allowance:

The present invention relates to a communication system. Specifically, the invention is directed to a circuit for compensating phase mismatch generated between in-phase signal and quadrature-phase signal of a receiver.

Regarding **claim 1**, the instant application is directed to an non-obvious improvement over the invention described in Pat. No. 4,394,626 to Kurihara et al. The improvement comprises a local oscillator providing in-phase local oscillating signal and quadrature-phase signal to first and second mixers outputting input signal with mixing in-phase local oscillating signal and quadrature-phase local oscillating signal, respectively, comprising: a local oscillating unit having first and second delay cells and outputting said in-phase local oscillating signal and said quadrature-phase local oscillating signal; and a correction circuit for controlling phase matching characteristic between said in-phase local oscillating signal and said quadrature-phase local oscillating signal outputted from said local oscillator, said correction circuit setting bias current flowing in said first and second delay cells of said local oscillator as being different.

Regarding **claim 4**, the prior art of record fail to disclose or fairly suggest a local oscillator providing in-phase local oscillating signal and quadrature-phase signal to first and second mixers outputting input signal with mixing in-phase local oscillating signal and quadrature-phase local oscillating signal, respectively, comprising: a local oscillating unit having first and second delay cells and outputting said in-phase local oscillating signal and said quadrature-phase local oscillating signal; and a correction circuit for controlling phase matching characteristic between said in-phase local oscillating signal and said quadrature-phase local oscillating signal outputted from said local oscillator, said correction circuit setting bias voltage applied to first and second delay cells as being different.

Regarding **claim 5**, the prior art of record fail to disclose or fairly suggest a local oscillator providing in-phase local oscillating signal and quadrature-phase signal to first and second mixers outputting input signal with mixing in-phase local oscillating signal and quadrature-phase local oscillating signal, respectively, comprising: a local oscillating unit having first, second and third terminals, first and second delay cells comprising active devices controlling current flowing to said third terminal from said second terminal in proportion to applied voltage to said first terminal, said oscillator outputting said in-phase local oscillating signal and said quadrature-phase local signal; and a correction circuit having first, second and third terminals connecting with said first, second and third terminals of said active device, respectively and controlling phase matching characteristic between said in-phase local oscillating signal and said quadrature-phase local signal outputted from said local oscillator by setting width of active device included in said first and second delay cells as being different.

Regarding **claim 9**, the prior art of record fail to disclose or fairly suggest a local oscillator providing in-phase local oscillating signal and quadrature phase signal to first and second mixers outputting input signal with mixing in-phase local oscillating signal and quadrature-phase local oscillating signal, respectively, comprising: a local oscillating unit comprising first and second delay cells comprising passive device having specific impedance and outputting said in-phase local oscillating signal and said quadrature-phase local oscillating signal; and a correction circuit having first and second terminals connecting, with one end and the other end of said passive device and controlling phase matching characteristics between said in-phase local oscillating signal

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and said quadrature-phase local oscillating signal being outputted from said local oscillator by making impedance of said passive device included said first and second delay cells different.

Regarding **claim 13**, the prior art of record fail to disclose or fairly suggest a receiver comprising: a local oscillator having first and second delay cell and outputting in-phase local oscillating signal and quadrature-phase local oscillating signal; first and second mixers mixing input signal with said in-phase local oscillating signal and said quadrature-phase signal, respectively and outputting the mixed signal; and a correction circuit for controlling phase matching characteristic between said in-phase local oscillating signal and said quadrature-phase local oscillating signal outputted from said local oscillator, said correction circuit setting bias voltage applied to first and second delay cells as being different.

Regarding **claim 15**, the prior art of record fail to disclose or fairly suggest a receiver comprising: a local oscillator having first second and third terminals, first and second delay cells comprising active devices controlling current flowing to said third terminal from said second terminal in proportion to applied voltage to said first terminal, said oscillator outputting said in-phase local oscillating signal and said quadrature-phase local signal; first and second mixers mixing input signal with said in-phase local oscillating signal and said quadrature-phase signal, respectively and outputting the mixed signal; and a correction circuit having first, second and third terminals connecting with said first, second and third terminals of said active device, respectively and correcting phase matching characteristic between signals outputted from said first anti

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second mixers by setting width of active device included in said first and second delay cells as being different.

Regarding **claim 16**, the prior art of record fail to disclose or fairly suggest a receiver comprising: a local oscillator comprising, first and second delay cells comprising passive device having specific impedance and outputting said in-phase local oscillating signal and said quadrature-phase local oscillating signal; first and second mixers mixing input signal with said in-phase local oscillating signal and said quadrature-phase signal, respectively and outputting the mixed signal; and a correction circuit having first and second terminals connecting with one end and the other end of said passive device and controlling phase matching characteristics between said in-phase local oscillating signal and said quadrature-phase local oscillating signal being outputted from said local oscillator by making impedance of said passive device included said first and second delay cells different.

## Conclusion

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sonny TRINH whose telephone number is 571-272-7927. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward URBAN can be reached on 571-272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

3/22/06

  
**SONNY TRINH**  
**PRIMARY EXAMINER**